

## ABSTRACT OF THE DISCLOSURE

A reference current ( $I_{ref}$ ) that includes a constant component current ( $I_{refc}$ ) and a transient component current ( $I_{reftr}$ ) is fed to the reference FET (QB) such that a source potential (VSA) of the main FET (QA) when a load current ( $I_D$ ) flowing a main FET (QA) is not within the range of an over-current containing a transient component is not lower than a source potential (VSB) of a reference FET (QB). A reference current ( $I_{ref}$ ) vibrates by detecting that a source potential (VSA) of the main FET is lower than a source potential (VSB) of a reference FET. A vibration number of times is counted up to a predetermined number of times, thereby turning OFF the main FET (QA).